**Grade level:** Grade 8  **Content:** Mathematics Data Analysis

**Lesson:** The Dice Game

**Next Generation Sunshine State Standards/Benchmarks:**

MA.8.S.3.1 Select, organize and construct appropriate data displays, including box and whisker plots, scatter plots, and lines of best fit to convey information and make conjectures about possible relationships.

**Lesson Objective:**

Students will be able to interpret and construct box-and-whisker plots, scatter plots and line graphs with an accuracy of 4 out of 5 equations.

**Alternative outcomes/objectives:**

Students will be able to use the knowledge gained when looking at different situations in life to help make decisions.

**Prior Knowledge/Preskills:**

Students will need to use the skills taught in previous grades on analyzing tables, bar graphs, pictographs and line plots.

**Materials:**

Dice (one per student)

5 Index cards per student

1 Sheet of graph paper per student

1 Ruler per student

Color Pencils for students to use

Group number cards (to be given to students to know which group they will be in)

Group number Signs (to be placed on tables to designate group # area)

**Motivation:** The students will be competing against each other in groups of 5; they will be learning and having fun at the same time.

**Teacher-directed Instruction**

**Model of Instruction**: Two Same-Ability Groups

**Lesson Procedures-Lesson Introduction\***:

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| **Content Teacher** | **Special Education Teacher** |
| -**Opening** For Whole Group  Today we are going to play the Dice Game. You are going to use the results of your game to create box and whisker plots, scatter plots and line graphs.  -**Overview**  We are going to split you up into groups of 5. You will gather up your information and then trade it with the students in your group. Tomorrow we will be getting back into our groups and are going create your data sheets. Some of you will be working with me and some groups will be working with Ms. X. You all have received a group number, please get up and go to your assigned group area.  -**Review**  Yesterday we learned how to read data and make a box and whisker plot, a scatter plot and a line graph. We are going to use what we learned yesterday in today’s activity. | -**Opening** Whole Group Given by Content Teacher  -**Overview**  Will be handing out a card indicating which group they will be in. Will be handing out materials to students to use for activity.  -**Review**  Will display on board the different graphs that was taught the day before. |

-**Expectations**

Students will learn to gather data, record data and graph data. Students will also learn to work in a group setting.

-**Rationale**

Students can use the knowledge learned to help make decisions in life. This knowledge will help student learn how to gather information whether it be mathematically based or general information. Students will be able to use knowledge to label items, categorize items and graph items if needed.

-**Guiding Questions**

When you roll your dice what number do you want to come up? How many times do you think your number will come up out of 12 rolls? Why do you think it will come up so many times? Can your number come up each of the 12 rolls? Why or why not? How are we going to display our data?

**Guided Practice: Lead and Support\* Day 1 of Lesson**

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| **Content Teacher** | **Special Education Teacher** |
| Go over the directions of the game.   1. You will take the 1 index card and write your name on the top and then you will write your number on the first line. 2. You will roll your die 12 times and record on the index card your results. 3. Then you will copy your results on to the other 4 index cards. 4. You will exchange your index cards with each person in your group so you will have 5 different index cards (one of them being yours). 5. Tomorrow you will complete the activity by taking your data and creating your graphs. | Go over the directions of the game.   1. Find your index cards (teacher will show what it looks like) from your materials. 2. Write your name on the top right hand side of the index card. 3. Write the number that you chose from the die that you want to come up on the first line of the index card. 4. Down the left hand side write 1 through 12. 5. Now roll your die and write down next to #1 your first result or the number on the die that you just rolled. 6. You are going to roll the die again and write down the next number that comes up next to #2. 7. You are going to keep rolling and writing down the number until you fill in all 12 spots. 8. Now that you have all 12 rolls you are going to copy the information onto the other index cards, make sure you write your name and the number you chose on the top. 9. Next you are going to give your card to each person in your group and you are going to get their card in return, so Mike give your card to Sam and Sam give your card to Mike. 10. Make sure to put all your cards in your folder and bring them back tomorrow so we can complete the activity. |

**-Closure**

Remind students that they will be working with the same group the following day. They are responsible to bring in all materials that they received today with them tomorrow. We will complete this assignment tomorrow and have a quiz on it the day after.

**Independent Practice/Cooperative Practice\* Day 2 of Lesson**

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| **Content Teacher** | **Special Education Teacher** |
| 1. Students will take out gathered data. 2. They will use graph paper to record the data on the five index cards. 3. They will compare the results and see who won. | Independent Practice with some guidance.   1. Take out the index cards that you got from your group. 2. Take out your graph paper. 3. You are going to make 5 small Bar graphs, one for each group member. Add up how many times each number came up and graph it. 4. You are then going to make one Line graph showing the final results of all the students to see which number came up the most. |

**Assessment\*: Day 3 of Lesson**

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| **Content Teacher** | **Special Education Teacher** |
| Students will have the opportunity to exchange findings with other group members to make sure that they have completed the assignment correctly as well as give an opportunity to students to ask/answer questions they may have.  Teacher will grade activity papers.  Students will be given a 5 question quiz that will have data information provided. Students will be required to create the plots/graph to display knowledge learned. | Group will gather together to compare findings. Teacher will work with students in going over each student’s finds. Students will have the opportunity to discuss what they came up with as well as correct any mistakes.  Teacher ill grade papers that were turned in from activity based on participation, observation, and completion of assignment.  Varying Exceptionalities and ESOL modifications. Students will be given a 5 question quiz. The quiz will be multiple choice questions with bar graph and line graph visuals created. |

**Extensions:**

Students could take results home and create grids on their computers using Excel.

Students could combine the class results and create a whole group graph.

Can you these videos to help teach or review

<http://www.onlinemathlearning.com/line-graph.html>

<http://www.onlinemathlearning.com/bar-graph.html>

<http://www.onlinemathlearning.com/box-whisker-plot.html>

<http://www.onlinemathlearning.com/scatter-plots.html>

**Accommodations/Modifications:**

Working in groups by abilities

Used manipulative to give hands on and visual aids

Teacher assistance on independent practice

Quiz modified with pictures and multiple choice questions

**Access Points:**Independent: MA.8.S.3.In.a   Organize data into categories, identify the labels, and display in bar and simple line graphs

Supported: [MA.8.S.3.Su.a](javascript:__doPostBack('ctl00$ContentPlaceHolder1$StandardsViewerPanelUC1$RadPanelBar1$i12$i0$StandardsRelatedAccessPointsUC1$Repeater1$ctl02$Repeater2$ctl01$linkbtnAccess',''))Organize data in pictographs and match the labels for categories.

Participatory:[MA.8.S.3.Pa.a](javascript:__doPostBack('ctl00$ContentPlaceHolder1$StandardsViewerPanelUC1$RadPanelBar1$i12$i0$StandardsRelatedAccessPointsUC1$Repeater1$ctl03$Repeater2$ctl01$linkbtnAccess',''))Count the objects, pictures, or symbols used in a pictograph or chart and identify a total to 8.

**References**

<http://teachers.net/lessons/posts/1169.html> Used to assist in creating the Dice Game

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